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**College success 101: Resilience and mental health mediate the relationship between  
Adverse Childhood Experiences and college functioning**

An Honors Thesis submitted in partial fulfillment of the requirements of Honors Studies in  
Psychology

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### **Abstract**

Adverse Childhood Experiences (ACEs) are potentially traumatic events that children experience during the first 18 years of their lives. They can lead to health risks, both physical and mental, later on in life (Felitti et al., 1998). One of the largest transitions a person will experience is the transition from being a child to becoming an adult. This transition is often paired with people entering college, and being able to function successfully in college is a vital part of this transition. College functioning is assessed through educational functioning, relational functioning, and psychological functioning (O'Donnell et al., 2018). The purpose of this study is to investigate the relationship between Adverse Childhood Experiences and college functioning. There are, however, other variables that could be partially responsible for this relationship. Resiliency is determined by how quickly and easily a person is able to bounce back after a difficult experience (Smith et al., 2008). Resilience could have a potential effect on college functioning. Mental health, in terms of depression, anxiety, and stress, also may have a potential effect on college functioning. The additional purpose of this study is to examine whether resiliency and mental health mediate the relationship between Adverse Childhood Experiences and college functioning.

*Keywords:* Adverse Childhood Experiences, resiliency, mental health, college functioning

**College success 101: Resilience and mental health mediate the relationship between  
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Adverse Childhood Experiences (ACEs) are situations of adversity that people undergo as children. These experiences can vary from neglect to physical abuse to death of a parent. ACEs can have lasting effects on a person's physical and mental health throughout their entire lives (Felitti et al., 1998). For people that have more than four ACEs, they are automatically subject to an increased risk for high-risk health behaviors as well as developing medical issues or conditions (Campbell et al., 2016). Depending on the adversity experienced as a child, the risk levels associated with certain health conditions vary, some risks only increase 2-fold while others could be as much as a 12-fold increase (Felitti et al., 1998).

Adverse childhood experiences are major life stressors that typically cause children to experience continuous stress over long periods of time (Burke Harris, 2018). Temporary stress can be healthy and even help people through dangerous or physically challenging situations. However, stress is not meant to be sustained. When stress is sustained for long periods of time, this is known as toxic stress (Burke Harris, 2018). This type of stress can result in harmful physical and/or psychological effects to the person experiencing adversity (Burke Harris, 2018). The effect of stress on people is different for everybody and can yield various results. These effects on a person's health can be severe and impact a person long after the experience (Burke Harris, 2018).

The continuous stress placed on the minds and bodies of children undergoing an adverse childhood experience can be detrimental to their health. The effects cannot always be seen right away, often taking years to manifest their full impact. Over time, it has been discovered that these adverse childhood experiences tend to have lasting physical and/or psychological effects on

that child throughout their entire adult life (Thakur et al., 2020). Furthermore, adverse childhood experiences put people at an increased risk for specific health issues. These range anywhere from obesity and depression to cancer and heart disease (Felitti et al., 1998). The reason that these adverse childhood experiences have a relationship with health risks is due to stress. Continuous stress causes the body to work at a level higher than is ideal for peak functioning. Stress causes the heart to pump faster and harder, which in turn gradually thins the sides of the heart wall, which eventually can lead to a heart attack (Felitti et al., 1998). This is just one example of the impact that adverse childhood experiences can have on a person's health.

When a person experiences a stress response, it is typically temporary and can help a person through what they are experiencing. Whether this stress is competing in a race or running from a bear, stress can help you win or even keep you alive. The sympathetic nervous system is heavily involved in the stress response and is activated by the stress hormones epinephrine and norepinephrine (Carlson & Birkett, 2017). These hormones cause increases in metabolism, blood flow, and blood pressure, and result in many other physical changes. Stress can be beneficial when experienced temporarily, but can be detrimental when experienced over long periods of time.

In a process known as homeostasis, the body continuously aims to return back to its "normal" state after it undergoes changes due to a stressful event. However, when there is a prolonged stress response, the body cannot fully return to its normal state and experiences long-term harm as a result. When blood pressure is continuously at an increased level, this can eventually result in a stroke or a heart attack (Carlson & Birkett, 2017). Stress can also affect the immune system, particularly the body's inflammatory response. Stress can slow down this

natural response to illness or physical injury, which in turn slows down the body's ability to heal after it has been harmed (Carlson & Birkett, 2017).

The effects of prolonged stress are not only physical, but there are also psychological effects as well. The exposure to stress hormones for long periods of time can harmfully affect the hippocampus, which is responsible for memory and learning processes (Carlson & Birkett, 2017). Damage to the brain can be difficult, if at all possible, to reverse. Areas of the brain can degenerate or lose a significant amount of neurons due to stress (Carlson & Birkett, 2017). Many effects of long-term stress, both physical and psychological, can start to show fairly quickly or could even take decades to present themselves.

The effects of ACEs are integrated into the everyday life of those that have had adverse experiences. On a national level, people who have at least one ACE are more likely to engage in the participation of health-harming behaviors (Bellis et al., 2014). ACEs are responsible for approximately \$748 billion in costs annually, 75% of which stems from people that have at least two ACEs (Bellis et al., 2019). In adults that were subject to disadvantaged childhoods, their life-span or current life-expectancy is lower than adults that were subject to advantaged childhoods. The amount of time in an adult's life with an impairment due to a disadvantaged childhood is also higher than adults that had an advantaged childhood (Montez & Hayward, 2014).

While ACEs can have long-lasting effects, resiliency can help lessen the harm that ACEs have on a person. Resiliency is commonly defined as a person's ability to "bounce back" after adversity or difficult situations. It enables people to cope with adverse experiences in healthy and positive ways. Resilience is also one type of predictor of mental well-being and is correlated with coping skills (Fullerton et al., 2021). Resiliency can also impact the relationship between ACEs



and physical health by reducing the strength of the negative effects of ACEs on physical health (Khrapatina & Berman, 2017). People that are more resilient, even if they have experienced a great amount of adversity, share similar IQ scores and psychological well-being with people that have experienced a low amount of adversity. More resilient people also have significantly higher IQ scores and psychological well-being than people that have both low resiliency and have experienced a great amount of adversity (Masten et al., 1999).

Mental health, specifically regarding stress, anxiety, and depression, impacts a person's ability to perform daily functions. Having ACEs causes people to be susceptible to having problems regarding mental health. People with four or more ACEs are at a higher risk of having depression or anxiety than people with three or less ACEs (Watt et al., 2022; Windle et al., 2018). In the United States, ACEs are responsible for 30% of the reported cases of anxiety and for 40% of the reported cases of depression (Bellis et al., 2019). Mental health is also impacted by stress and the availability of support systems. People with a higher number of ACEs experience higher stress levels and lack proper social support (Karatekin & Ahluwalia, 2020). Over time, mental health is negatively affected in a progressive manner. For college students, mental health has been shown to decline throughout a semester, and the number of stressors impact the level of this decline (Karatekin, 2018).

Mental health is not the only aspect of a college student's life that has an effect on them. College functioning determines how well a college student is adjusting to being in college in terms of academic success, social relationships, and psychological well-being (O'Donnell et al., 2018). Having ACEs can result in college students experiencing academic barriers for success in college. College students that have ACEs are more likely to experience health problems and difficulties with their families compared to college students that do not have ACEs (Hinojosa et

al., 2019). These concerns serve as academic barriers for college students (Hinojosa et al., 2019). Children that have been maltreated experience a lack in competencies including behavior, emotion, and education (W. Walsh et al., 2010). As college students, the difference between those with a higher amount of ACEs and those with a lower amount, or those without ACEs, were greatest in mental health and smallest for academic performance (Merians et al., 2019).

One study revealed that 75.5% of college students had at least one ACE (Khrapatina & Berman, 2017). It is therefore anticipated that the presence of ACE scores will be common among participants. The transition from being a child to being an adult often coincides with the transition into college. It is possible that there are different effects of ACEs on college students beginning their transition into adults versus on adults later in their lives. The purpose of the study is to determine the relationship between Adverse Childhood Experiences and college functioning, and the role that resilience and mental health have in this relationship. The hypothesis of this study is that college functioning will be lower in college students that have higher Adverse Childhood Experiences, and that the effects of resilience and mental health will be partially responsible for this relationship and will serve as mediators between Adverse Childhood Experiences and college functioning. It is predicted that college students with higher ACE scores will have lower levels of resiliency and higher levels of poor mental health. It is anticipated that college students with higher levels of poor mental health will have lower levels of resiliency and college functioning. It is also predicted that college students with higher levels of resiliency will have higher levels of college functioning. Understanding the effects of resilience and mental health as mediators will enable people to become aware of factors outside of ACE scores that impact college functioning. Furthermore, people might realize the need for improving resiliency and mental health in order to combat the effects of ACEs.

## Methods

### Participants

The study received a total of 325 respondents. However, some respondents did not fully complete all questionnaires (i.e., missing data) or were ineligible for the study (i.e., were not currently college students), which resulted in a slightly lower total number of study participants ( $N = 309$ ). Of the three hundred-nine participants, there were 221 women, 84 men, 3 participants identifying as non-binary, and 1 participant identifying as genderfluid ( $M = 19.03$  years of age,  $Median = 19$ ,  $SD = 0.96$ ). A majority of the sample identified as White/Caucasian ( $n = 257$ ), with the remaining portion of participants identifying as Hispanic/Latinx ( $n = 24$ ), Asian/Asian American ( $n = 17$ ), Black/African American ( $n = 6$ ), Alaskan Native/Native American ( $n = 3$ ), Black and White ( $n = 1$ ), and White and Asian ( $n = 1$ ). Approximately 82% of participants completed the current study for partial credit towards a course requirement.

Given the outcome variable of the current study was college functioning, several college-related demographic questions were provided to participants. Most participants reported being a college student for less than one year ( $n = 232$ ; 75%), while the remaining portion of the participants reported being a college student for one to two years ( $n = 51$ ) or being a college student for three to four years ( $n = 26$ ). No participants reported being a college student for two to three years. Twenty-two percent of the sample were first-generation college students. Looking at educational finances, a majority of the sample were not honors students ( $n = 221$ ) and had not received a Pell Grant ( $n = 261$ ). On the other hand, a majority of the sample had received some form of academic scholarships ( $n = 253$ ), with approximately 70% of those individuals receiving partial coverage scholarships. About 40% of participants reported being employed, with most of those participants reporting part-time employment (38%).

## **Materials**

College students answered questions regarding their age, gender, ethnicity, number of years enrolled in college, honors student status, and employment status. Students also reported whether or not they were first-generation college students, recipients of a Pell Grant (income-based financial assistance for college), and if they were recipients of any academically-oriented scholarships (merit-based financial assistance for college). The questionnaires included in this study assessed the number of Adverse Childhood Experiences (ACEs) and the levels of resiliency, mental health, and college adjustment.

### ***Adverse Childhood Experiences (ACEs)***

The Adverse Childhood Experiences International Questionnaire (World Health Organization, 2018) is a self-report questionnaire that assesses the number of potentially traumatic events which may have occurred during the first 18 years of life. These Adverse Childhood Experiences, or ACEs, are grouped into ten different categories. The first four categories assess whether or not the participant, during the first 18 years of life, lived with a household member who experienced (1) substance abuse, (2) mental illness, (3) incarceration, and/or (4) death. The fifth category of ACEs assesses whether or not the participant, during the first 18 years of life, experienced (5) parental separation and/or divorce. The final five categories of ACEs assess whether or not the participant, during the first 18 years of life, experienced (6) emotional neglect, (7) physical neglect, (8) emotional abuse, (9) physical abuse, and/or (10) sexual abuse. For the first five ACEs categories listed above, participants were asked to respond with either a “Yes” or “No”. For the latter five ACEs categories listed above, participants were asked to rate each item on a 5-point likert-type scale ranging from “Never” to “Always/All of the time”. If participants indicated that any of these ACEs had occurred for categories 1-5 above

(i.e., by endorsing “Yes”), one point was given for each category endorsement (for up to 5 total points for this section). If participants indicated that even one instance occurred for categories 6-10 above (i.e., by endorsing either “Rarely/Once”, “Sometimes/A few times”, “Most of the time/Many times” or “Always/All of the time”), one point was given for each category endorsement (for up to 5 total points for this section). In other words, the frequency scale was transformed into a binary scale of “happened”/“did not happen”, as directed in the World Health Organization scoring guidelines (World Health Organization, 2018). Then a summation across the two sections was conducted, resulting in total ACEs scores ranging from 0 to 10, with higher scores indicating greater numbers of ACEs. Past research has found evidence of concurrent validity between the ACE-IQ and the Childhood Trauma Questionnaire (Kazeem, 2015; Wingenfeld et al., 2011). Conducting test-retest reliability on ACE-IQ has been limited. Previous research has shown adequate levels of reliability for various subscales (Cronbach’s alpha ranging from 0.69 to 0.90; Téllez et al., 2022). The Cronbach’s alpha for all 10 ACEs items combined in the present study was 0.71.

### ***Resiliency***

The Brief Resilience Scale (Smith et al., 2008) is a self-report questionnaire which measures a person’s ability to “bounce back” after a stressful event. Participants were asked to rate how much they agreed with statements about their personal resiliency levels on a scale of one to five in which one represented “*Strongly Disagree*”, indicating low resiliency, and five represented “*Strongly Agree*”, indicating high resiliency. Half of the questions were reverse scored in which “Strongly Disagree” indicated high resiliency. Total average resiliency scores were calculated by the summation of the likert-type ratings on the six items (using reverse scored items) divided by six (total number of items). Higher scores indicated greater levels of

resiliency. Past research has demonstrated that the Brief Resilience Scale is internally consistent (Cronbach's alphas ranging from 0.80 to 0.91), while also showing acceptable reliability across time ( $r = 0.69, p < 0.001$ ; Smith et al., 2008). The Cronbach's alpha for all six resiliency items in the present study was 0.84.

### ***Mental Health***

The Depression, Anxiety, and Stress Scales: Short 21-item version (DASS21; Lovibond & Lovibond, 1995) is a self-report questionnaire which measures mental health, specifically levels of depression, anxiety, and stress. Participants answer questions about how much they feel each statement applied to them over the course of the past week. Participants indicated how they felt on a scale of zero to three, in which zero represented "*Did not apply to me at all*" and three represented "*Applied to me very much, or most of the time*". Total average mental health scores were calculated by the summation of the likert-type ratings on all 21 items (combining the depression, anxiety and stress subscales) and then dividing that sum by 21 (total number of items). Higher scores indicated greater levels of poor mental health (i.e., higher levels of depression, anxiety, and stress). Past research has demonstrated that the DASS21 is internally consistent (Cronbach's alpha = ranging from 0.88 to 0.93 for all subscales combined; Tran et al., 2013; Bibi et al., 2020) as well as demonstrating good construct and structure validity (Bibi et al., 2020). The Cronbach's alpha for all 21 DASS items in the present study was 0.94.

### ***College Adjustment***

The College Adjustment Questionnaire (CAQ; O'Donnell et al., 2018) is a self-report questionnaire that measures the educational, relational, and psychological functioning of college students. Participants rated statements about their college functioning on a scale of one to five, in which one represented "*Very Inaccurate*" and five represented "*Very Accurate*". Five questions

were reverse scored in which a lower score indicated higher college functioning. Total average college adjustment scores were calculated by the summation of the likert-type ratings on all 14 items (combining the educational, relational, and psychological functioning subscales) and then dividing that sum by 14 (total number of items). Higher scores indicated greater levels of college adjustment (i.e., higher levels of educational, relational, and psychological functioning in college). Past research has demonstrated that the CAQ is internally consistent (Cronbach's alphas for subscales ranging from 0.79 to 0.89; O'Donnell et al., 2018). No test-retest reliability or validity information is yet available for this measure. The Cronbach's alpha for all 14 CAQ items in the present study was 0.88.

### **Procedure**

Survey materials, created with Qualtrics, were uploaded onto the SONA research website to obtain the participation of college students that were enrolled in undergraduate psychology courses. Participants accessing the study through SONA received partial course credit. The study was also sent to university students living in campus residence halls through email or through the GroupMe app. It is important to note that there were no significant differences on demographic questions, except for five categories, and there were no significant differences on questionnaire responses between the SONA sample ( $n = 252$ ) and the sample from campus residence halls ( $n = 57$ ).

After providing informed consent, participants completed demographic questions as well as four randomized questionnaires. Upon completion, participants were then debriefed regarding the purpose of the study.

## Results

Questionnaire responses for number of ACEs, resiliency, and college functioning were non-skewed (0.53, -0.24, -0.27, respectively), indicating the data distributions were nearly symmetrical. However, questionnaire responses for mental health displayed a positive skew (0.95) where most participants scored below the mean (i.e., indicating greater mental wellbeing). The kurtosis of questionnaire responses for number of ACEs, resiliency, college functioning, and mental health were -0.46, -0.05, -.35, and 0.18, respectively, indicating the distributions tended to have fewer, less extreme outliers than a normal distribution. Other descriptive statistics for all questionnaires were as following: 1) number of ACEs [ $M = 2.91$ ,  $SD = 2.16$ ,  $Median = 3.00$ ,  $Min = 0$ ,  $Max = 9$ ]; 2) resiliency [ $M = 3.37$ ,  $SD = 0.74$ ,  $Median = 3.50$ ,  $Min = 1$ ,  $Max = 5$ ]; 3) poor mental health [ $M = 1.76$ ,  $SD = 0.58$ ,  $Median = 1.62$ ,  $Min = 1$ ,  $Max = 3.71$ ]; and 4) college functioning [ $M = 3.60$ ,  $SD = 0.71$ ,  $Median = 3.64$ ,  $Min = 1.29$ ,  $Max = 5$ ]. Further, as hypothesized, reports of ACEs were relatively common, with approximately 86% of the sample reporting at least one category of ACEs. Further, similar numbers of participants were seen for zero, one, two, three, or four ACEs were observed (Zero ACEs  $n = 43$ , One ACEs  $n = 57$ , Two ACEs  $n = 43$ , Three ACEs  $n = 51$ , Four ACEs  $n = 48$ , Five ACEs  $n = 27$ , Six ACEs  $n = 13$ , Seven ACEs  $n = 19$ , Eight ACEs  $n = 7$ , and Nine ACEs  $n = 1$ ).

Independent samples t-tests were conducted to compare questionnaire total scores (viz., ACEs, resiliency, mental health, and college functioning) with binary demographic questions, while one-way ANOVAs were conducted to compare questionnaire total scores with demographic questions containing more than two categories. Most tests were non-significant, indicating no group demographic differences on questionnaire response patterns, except for



first-generation college students, gender identification, being a recipient of a Pell Grant, being a recipient of academic scholarships, and employment status.

For first-generation college students, an independent-samples t-test demonstrated a significant difference for first-generation college students ( $M = 3.93$ ,  $SD = 2.15$ ,  $n = 68$ ) and non-first-generation college students ( $M = 2.62$ ,  $SD = 2.09$ ,  $n = 241$ ),  $t(307) = 4.52$ ,  $p < 0.001$ , two-tailed, such that first-generation college students were more likely to have higher numbers of ACEs ( $\sim 4$ ) as compared to non-first-generation college students ( $\sim 2.5$ ). The effect size was moderate, with a Cohen's  $d$  of 0.62, and the 95% confidence interval around the difference between group means was relatively precise, ranging from 0.35 to 0.89.

Another independent-samples t-test demonstrated a significant difference for first-generation college students ( $M = 3.42$ ,  $SD = 0.65$ ,  $n = 68$ ) and non-first-generation college students ( $M = 3.65$ ,  $SD = 0.73$ ,  $n = 241$ ),  $t(307) = -2.29$ ,  $p = 0.02$ , two-tailed, such that non-first-generation college students were more likely to have higher levels of college functioning as compared to first-generation college students. The effect size was small, with a Cohen's  $d$  of -0.32, and the 95% confidence interval around the difference between group means was relatively precise, ranging from -0.59 to -0.04.

For gender identification, an independent-samples t-test demonstrated a significant difference for individuals identifying as males ( $M = 3.68$ ,  $SD = 0.69$ ,  $n = 84$ ) and individuals identifying as females ( $M = 3.25$ ,  $SD = 0.74$ ,  $n = 221$ ),  $t(303) = 4.69$ ,  $p < 0.001$ , two-tailed, such that males were more likely to have higher levels of resiliency as compared to females. The effect size was moderate, with a Cohen's  $d$  of 0.60, and the 95% confidence interval around the difference between group means was relatively precise, ranging from 0.35 to 0.86.

Another independent-samples t-test, violating the assumption of homogeneity of variances ( $p < 0.001$ ), demonstrated a significant difference for individuals identifying as males ( $M = 1.58$ ,  $SD = 0.44$ ,  $n = 84$ ) and individuals identifying as females ( $M = 1.82$ ,  $SD = 0.62$ ,  $n = 221$ ),  $t(210) = -3.85$ ,  $p < 0.001$ , two-tailed, such that females were more likely to have higher levels of poor mental health as compared to males. The effect size was small to moderate, with a Cohen's  $d$  of  $-0.43$ , and the 95% confidence interval around the difference between group means was relatively precise, ranging from  $-0.68$  to  $-0.17$ .

For being a recipient of a Pell Grant, an independent-samples t-test demonstrated a significant difference for individuals who received a Pell Grant ( $M = 4.06$ ,  $SD = 2.20$ ,  $n = 48$ ) and individuals who had not received a Pell Grant ( $M = 2.70$ ,  $SD = 2.09$ ,  $n = 261$ ),  $t(307) = 4.12$ ,  $p < 0.001$ , two-tailed, such that individuals who received a Pell Grant were more likely to have higher numbers of ACEs ( $\sim 4$ ) as compared to individuals who had not received a Pell Grant ( $\sim 3$ ). The effect size was moderate, with a Cohen's  $d$  of  $0.65$ , and the 95% confidence interval around the difference between group means was relatively precise, ranging from  $0.33$  to  $0.96$ .

Another independent-samples t-test demonstrated a significant difference for individuals who received a Pell Grant ( $M = 3.40$ ,  $SD = 0.71$ ,  $n = 48$ ) and individuals who had not received a Pell Grant ( $M = 3.63$ ,  $SD = 0.71$ ,  $n = 261$ ),  $t(307) = -2.06$ ,  $p = 0.04$ , two-tailed, such that individuals who received a Pell Grant were more likely to have lower levels of college functioning as compared to individuals who had not received a Pell Grant. The effect size was small, with a Cohen's  $d$  of  $-0.32$ , and the 95% confidence interval around the difference between group means was relatively precise, ranging from  $-0.63$  to  $-0.01$ .

For being a recipient of academic scholarships, an independent-samples t-test demonstrated a significant difference for individuals who received academic scholarships ( $M =$

1.79,  $SD = 0.58$ ,  $n = 253$ ) and individuals who had not received academic scholarships ( $M = 1.61$ ,  $SD = 0.56$ ,  $n = 56$ ),  $t(307) = 2.06$ ,  $p = 0.04$ , two-tailed, such that individuals who received academic scholarships were more likely to have higher levels of poor mental health as compared to individuals who had not received academic scholarships. The effect size was small, with a Cohen's  $d$  of 0.30, and the 95% confidence interval around the difference between group means was relatively precise, ranging from 0.01 to 0.59.

For employment status, a one-way ANOVA demonstrated a significant difference for employment status and number of ACEs [ $F(2, 306) = 9.85$ ,  $p < 0.001$ ,  $\eta^2 = 0.06$ ], indicating a medium effect size. Subsequent post hoc comparisons using Tukey's HSD procedure indicated that the mean score for unemployed students ( $M = 2.55$ ,  $SD = 2.04$ ,  $n = 186$ ) was significantly different than the mean score for students employed part-time ( $M = 3.35$ ,  $SD = 2.20$ ,  $n = 117$ ;  $p = 0.004$ , 95% C.I. = 0.22, 1.39), such that students employed part-time were more likely to have higher numbers of ACEs (~ 3.5) as compared to unemployed students (~ 2.5). Similarly, the mean score for unemployed students ( $M = 2.55$ ,  $SD = 2.04$ ,  $n = 186$ ) was significantly different than the mean score for students employed full-time ( $M = 5.50$ ,  $SD = 2.07$ ,  $n = 6$ ;  $p = 0.002$ , 95% C.I. = 0.90, 5.01), such that students employed full-time were more likely to have higher numbers of ACEs (~ 5.5) as compared to unemployed students (~ 2.5). It is important to interpret these results with caution given the sample size of students employed full-time was relatively small ( $n = 6$ ). Lastly, the mean score for students employed part-time ( $M = 3.35$ ,  $SD = 2.20$ ,  $n = 117$ ) was significantly different than the mean score for students employed full-time ( $M = 5.50$ ,  $SD = 2.07$ ,  $n = 6$ ;  $p = 0.04$ , 95% C.I. = 0.07, 4.23), such that students employed full-time were more likely to have higher numbers of ACEs (~ 5.5) as compared to students employed part-time

(~ 3.5). Again, given the small sample size of students employed full-time, these results need to be interpreted with caution.

Another one-way ANOVA demonstrated a significant difference for employment status and mental health [ $F(2, 306) = 5.00, p = 0.007, \eta^2 = 0.03$ ], indicating a small effect size. Subsequent post hoc comparisons using Tukey's HSD procedure indicated that the mean score for unemployed students ( $M = 1.69, SD = 0.56, n = 186$ ) was significantly different than the mean score for students employed part-time ( $M = 1.84, SD = 0.59, n = 117; p = 0.05, 95\% \text{ C.I.} = -0.004, 0.32$ ), such that students employed part-time were more likely to have higher levels of poor mental health as compared to unemployed students. Similarly, the mean score for unemployed students ( $M = 1.69, SD = 0.56, n = 186$ ) was significantly different than the mean score for students employed full-time ( $M = 2.26, SD = 0.78, n = 6; p = 0.04, 95\% \text{ C.I.} = 0.14, 1.14$ ), such that students employed full-time were more likely to have higher levels of poor mental health as compared to unemployed students. Again, it is key to note the small sample size in the employed full-time group. Lastly, students employed part-time did not significantly differ from students employed full-time on mental health.

Next, Pearson correlation coefficients were conducted between all pairs of variables (see *Table 1*). Higher numbers of ACEs were significantly related to lower levels of resiliency [ $r(307) = -0.16, p = 0.006$ ] and lower levels of college functioning [ $r(307) = -.32, p < 0.001$ ], while higher numbers of ACEs were significantly related to higher levels of poor mental health [ $r(307) = .30, p < 0.001$ ]. Further, higher levels of poor mental health were significantly related to lower levels of resiliency [ $r(307) = -0.55, p < 0.001$ ] and lower levels of college functioning [ $r(307) = -0.56, p < 0.001$ ]. Finally, higher levels of resiliency were significantly related to

higher levels of college functioning [ $r(307) = 0.55, p < 0.001$ ]. These results confirmed the hypothesized directional relationships between measures, with small to medium effect sizes.

Moreover, the aim of the present study was to examine the impact of the number of ACEs on college functioning as mediated by resiliency and psychological health. It was hypothesized that higher numbers of ACEs would negatively predict college functioning. It was also hypothesized that resiliency and psychological health would mediate this relationship. To test these hypotheses, a parallel mediator analysis was performed using multiple regression analyses via PROCESS macro model number 4 (Hayes, 2022). Prior to this analysis, the data was checked and met the assumptions of linear regression (i.e., linearity, normality, and homoscedasticity).

The mediation analysis revealed the overall model was significant [ $F(3, 305) = 75.15, MSE = 0.30, p < 0.001, R^2 = 0.43$ ], indicating that the model explained 43% of the total variance in college functioning. The ability to explain 43% of the total variance in college functioning was interpreted as a large effect size. The direct effect from the number of ACEs to college functioning was negative and statistically significant [ $b = -0.13, t = -2.88, p = 0.004$ ], indicating that individuals with higher numbers of ACEs were more likely to have lower levels of college functioning. The direct effect from the number of ACEs to resiliency was negative and statistically significant [ $b = -0.13, t = -2.35, p = 0.02$ ], indicating that individuals with higher numbers of ACEs were more likely to have lower levels of resiliency. The direct effect from the number of ACEs to mental health was positive and statistically significant [ $b = 0.27, t = 4.96, p < 0.001$ ], indicating that individuals with higher numbers of ACEs were more likely to experience higher levels of poor mental health. The indirect effects were tested using 5,000 bootstrap resamples. The indirect effect of resiliency on college functioning was positive and statistically

significant [ $b = 0.35, t = 6.71, p < 0.001$ ], indicating that individuals with higher levels of resiliency were more likely to experience higher levels of college functioning. The indirect effect of mental health on college functioning was negative and statistically significant [ $b = -0.33, t = -6.12, p < 0.001$ ], indicating that individuals with higher levels of poor mental health were more likely to experience lower levels of college functioning. Overall, these results demonstrated a significant parallel partial mediation model (see *Figure 1*).

### **Discussion**

The data presented in this study revealed that there was a significant difference in the relationship between Adverse Childhood Experiences and college functioning. This supported the hypothesis that there would be a negative correlation between Adverse Childhood Experiences and college functioning, meaning that college students with higher ACE scores had lower college functioning. Previous research revealed that 75.5% of college students had at least one ACE (Khrapatina & Berman, 2017), and therefore part of this study's prediction was that ACEs would be common among participants. This prediction was supported by the data, where approximately 86% of the sample reported having at least one ACE. A majority of the sample indicated having ACE scores of zero, one, two, three, or four.

There were no significant differences in the majority of the demographics for the sample. The demographics that did have significant differences were first-generation college students, gender identification, Pell Grant recipients, academic scholarship recipients, and employment status. Each of these significant differences are discussed below.

First-generation college students were more likely to have higher ACEs than non-first-generation college students. This could be due to the fact that many first-generation college students fall within a lower socioeconomic status, which is correlated with higher ACEs

(D. Walsh et al., 2019). First-generation college students were also more likely to have lower levels of college functioning than non-first-generation college students. It is less likely for first-generation college students to have an academic role model in the home; therefore, first-generation college students lack a guide or person that can relate to their college experience and give them advice on how to successfully manage being in college.

Regarding gender identification, participants that identified as males significantly differed in resiliency and mental health. Participants that identified as males were more likely to have higher levels of resilience and lower levels of poor mental health than participants that identified as females. There is a possibility that the stigmatization surrounding mental health and the societal gender norms that males must be masculine (e.g., toughness, emotional control, strength, etc.) result in a self-report bias for males on resiliency and mental health responses (Rice et al., 2021).

A Pell Grant is financial aid provided to college students with low-income. The participants that currently receive or have received a Pell Grant in the past were more likely to have higher ACEs than participants that do not currently receive or have never received a Pell Grant in the past. This again is likely due to the fact that people with a lower socioeconomic status tend to have higher ACEs (D. Walsh et al., 2019). Additionally, participants that currently receive or have received a Pell Grant in the past were more likely to have lower levels of college functioning than participants that do not currently receive or have never received a Pell Grant in the past. This could be because a Pell Grant is not based on academic achievements, and therefore students do not necessarily have the proper preparations or skills before college in order to achieve higher college functioning.

Academic scholarships, on the other hand, are provided to college students based on academic achievements. Participants that receive academic scholarships were more likely to have higher levels of poor mental health than participants that do not receive academic scholarships. Many high-achieving students place their self-worth in their academic achievements. The mental health of college students can suffer through attempting to maintain high standards of academic success beyond a manageable degree, or through being unable to maintain this high standard for themselves.

The last demographic that indicated a significant difference in the data was employment status. Participants that were both employed part-time or full-time were likely to have higher ACEs than participants that were unemployed. Furthermore, participants that were employed full-time were more likely to have higher ACEs than participants that were employed part-time. This can also be explained with socioeconomic status. Students working part-time and full-time do so because of financial need, and likely fall into a lower socioeconomic status which is related to higher ACEs (D. Walsh et al., 2019). For mental health, participants that were both employed part-time or full-time were likely to have higher levels of poor mental health than participants that were unemployed. This is likely due to the difficulties of managing a balance between being a college student and being a part-time or full-time worker simultaneously. However, it is important to note the sample size within the full-time employed group and how this limits the interpretation of these results.

Additional limitations of the present study involved the lack of specification of participant age over 22 years as well as the lack of inclusion of students that were enrolled in college for more than four years. However, despite these limitations, it seems warranted to



consider the present findings as valid given their statistical significance and medium to large effect sizes.

The relationship between Adverse Childhood Experiences was shown to be significantly different and negatively correlated with college functioning. These variables were also compared with resiliency and mental health (see *Table 1*), all of which yielded significant differences. The data shows that participants with higher ACEs were more likely to have lower levels of resiliency, lower levels of college functioning, and higher levels of poor mental health. When focusing on mental health, participants with higher levels of poor mental health were more likely to have lower levels of resiliency.

The mediation model (see *Figure 1*) indicated that resiliency and mental health mediate the relationship between Adverse Childhood Experiences and college functioning. These mediators were responsible for 43% of the total variance in college functioning. This means that Adverse Childhood Experiences on their own do not fully result in the levels of college functioning seen in participants, and that resiliency and mental health play a role in that relationship between Adverse Childhood Experiences and college functioning. The effects of resiliency and mental health on college functioning are indirect effects. Participants with higher levels of poor mental health were more likely to have lower levels of college functioning. For resiliency, participants with higher levels of resiliency were more likely to have higher levels of college functioning. The mediation model yielded significant differences for every direct and indirect effect. This data indicates the importance of resiliency and mental health on the relationship between Adverse Childhood Experiences and college functioning.

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## Appendix

**Table 1. Pearson Correlation Coefficients for Number of ACEs, Resiliency, Poor Mental Health, and College Functioning.**

Measures		ACEs	Resiliency	Poor Mental Health	College Functioning
ACEs	Pearson Correlation	1	-0.16**	0.30***	-0.32***
	Sig. (2-tailed)		0.006	<0.001	<0.001
	N	309	309	309	309
Resiliency	Pearson Correlation		1	-0.55***	0.55***
	Sig. (2-tailed)			<0.001	<0.001
	N		309	309	309
Poor Mental Health	Pearson Correlation			1	-0.56***
	Sig. (2-tailed)				<0.001
	N			309	309
College Functioning	Pearson Correlation				1
	Sig. (2-tailed)				
	N				309

\*\*  $p < .01$ ; \*\*\*  $p < .001$

Figure 1. Parallel Partial Mediation Model with Standardized Betas.

